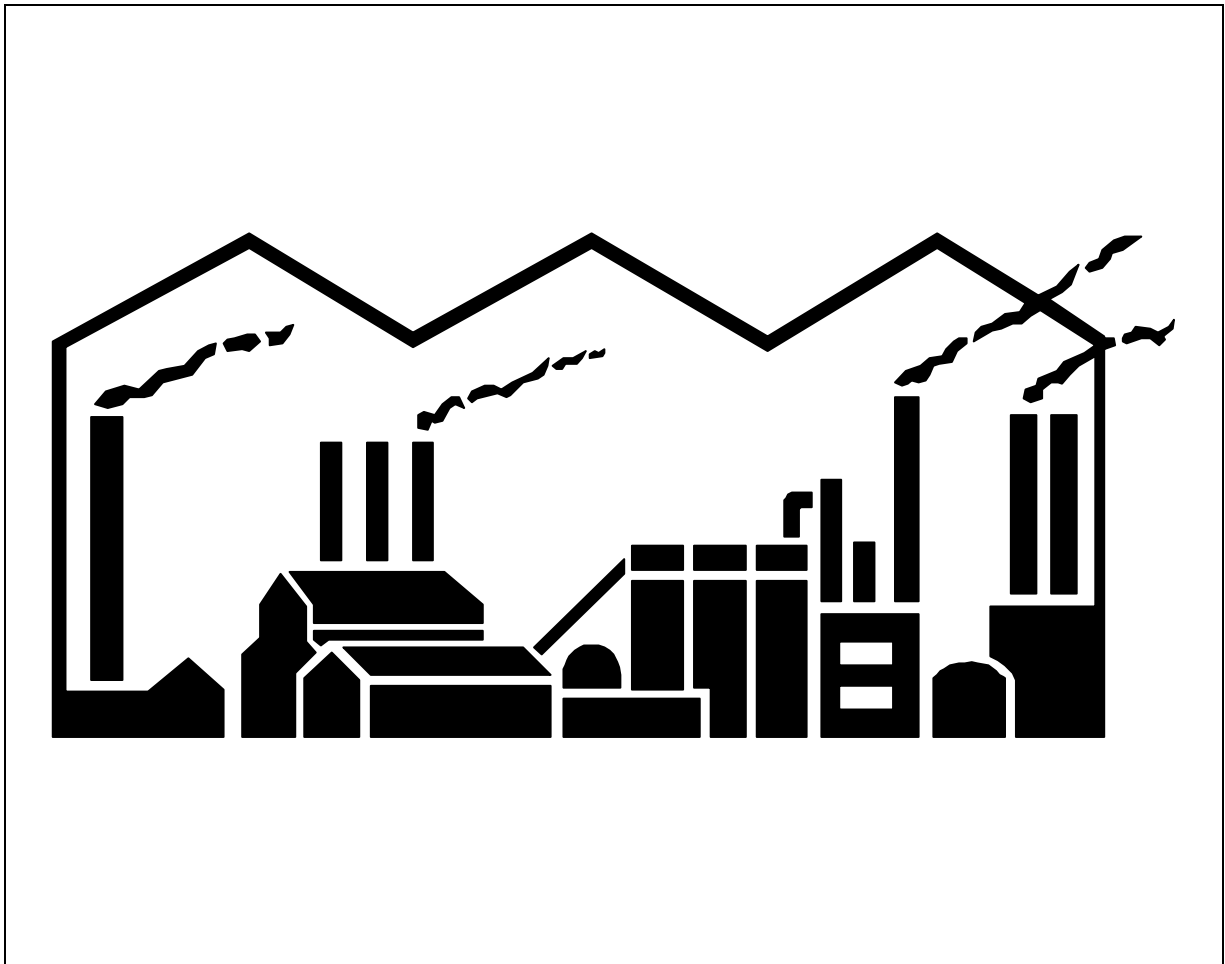


CENSUS OF FATAL OCCUPATIONAL INJURIES



MICHIGAN, 1997

CENSUS OF FATAL OCCUPATIONAL INJURIES

MICHIGAN, 1997

MIOSHA Information Division
Michigan Dept. of Consumer
& Industry Services
September, 1998
Reference Number 184117

TABLE OF CONTENTS

	<u>Page</u>
Fatal Work Injuries in Michigan, 1997	1
1997 Census Profiles	1
Background of the Census of Fatal Occupational Injury Program	1
Technical Notes	14

LIST OF TABLES

1. Number and Percent Distribution of Fatal Occupational Injuries by Event or Exposure Michigan, 1997	2
2. Number and Percent Distribution of Fatal Occupational Injuries by Selected Characteristics Michigan, 1997	4
3. Number and Percent Distribution of Fatal Occupational Injuries by Occupation Michigan, 1997	5
4. Number and Percent Distribution of Fatal Occupational Injuries by Industry Michigan, 1997	7
5. Number and Percent Distribution of Fatal Occupational Injuries by Source of Injury Michigan, 1997	10
6. Number and Percent Distribution of Fatal Occupational Injuries by Part of Body Michigan, 1997	12

LIST OF CHARTS

1. Fatal Occupational Injuries by Nature of Injury Michigan, 1997	13
2. Fatal Occupational Injuries by Industry Division Michigan, 1997	13

FATAL WORK INJURIES IN MICHIGAN, 1997

Injuries sustained in transportation accidents resulted in the death of 61 Michigan workers in 1997. This represents 35 percent of the 174 workers fatally injured in Michigan in 1997. Highway accidents accounted for 21 fatalities or 12 percent of the total. Being struck by an object resulted in the death of 13 Michigan workers and 23 others were killed as the result of falls. Assaults and violent acts accounted for 32 deaths or 18 percent of the total. These findings are from the Census of Fatal Occupational Injuries conducted by the Michigan Department of Consumer & Industry Services, MIOSHA Information Division in cooperation with the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor.

The Census of Fatal Occupational Injuries uses multiple sources to identify, verify, and profile work injuries that are fatal. Key information about each workplace fatality (such as occupation and other worker characteristics, equipment being used, and circumstances of the event) is obtained by cross referencing a variety of source records. These records include death certificates, workers compensation records, and reports to federal and state agencies.

1997 CENSUS PROFILES

Major findings of the Michigan Census are:

- * Transportation accidents led all other events and accounted for 35 percent of the 174 fatal occupational injuries in 1997. This was followed by Contact with Objects and Equipment at 20 percent and Assaults and Violent Acts with 18 percent. (Table 1)
- * Sixty eight percent of the fatally injured Michigan workers were 25 - 54 years of age.
- * Nine percent of Michigan's fatally injured workers were women.
- * Occupations with the largest number of worker fatalities were Transportation and material moving operations and Construction trades recording 25 fatalities each.
- * Industry groups with the largest number of Michigan fatal work injuries in 1997 were Construction (40), Manufacturing (35), and Services (26). (Table 4.)

BACKGROUND - CENSUS OF FATAL OCCUPATIONAL INJURY PROGRAM

The Census of Fatal Occupational Injuries program, part of the BLS safety and health statistics program, provides the most complete count of fatal work injuries available because it uses multiple state and federal data sources. The fatality census is conducted in all 50 states and the District of Columbia.

**Table 1. Number and Percent Distribution of Fatal Occupational Injuries
by Event or Exposure, Michigan, 1997**

1/ Event or Exposure	<u>Fatalities</u>	
	Number	Percent
Total	174	100
Transportation incidents	61	35
Highway	21	12
Collision between vehicles, mobile equipment	14	8
Moving in opposite directions, oncoming	6	3
Moving in intersection	4	2
Nonhighway (farm, industrial premises)	7	4
Noncollision accident	6	3
Overturned	6	3
Aircraft	12	7
Worker struck by vehicle, mobile equipment	19	11
Worker struck by vehicle, mobile equipment in roadway	5	3
Worker struck by vehicle, mobile equipment in parking lot or non-road area	13	7
Assaults and violent acts	32	18
Homicides	26	15
Shooting	24	14
Self-inflicted injury	6	3
Contact with objects and equipment	35	20
Struck by object	13	7
Struck by falling object	7	4
Struck by rolling, sliding objects on floor or ground level	4	2
Caught in or compressed by equipment or objects	15	9
Caught in running equipment or machinery	11	6
Caught in or crushed in collapsing materials	6	3
Falls	23	13
Fall to lower level	21	12
Fall from ladder	4	2
Fall from roof	8	5
Fall from scaffold, staging	3	2

**Table 1. Number and Percent Distribution of Fatal Occupational Injuries
by Event or Exposure, Michigan, 1997
(continued)**

1/ Event or Exposure	<u>Fatalities</u>	
	Number	Percent
Exposure to harmful substances or environments	13	7
Contact with electric current	8	5
Contact with overhead power lines	3	2
Oxygen deficiency	3	2
Drowning, submersion	3	2
Fires and explosions	10	6
Fires--unintended or uncontrolled	5	3
Explosion	5	3
Explosion of pressure vessel or piping	3	2

1/ Based on 1992 BLS Occupational Injury/Illness Classification Structures.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals due to rounding.

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies.
Census of Fatal Occupational Injuries, 1997.

Table 2. Number and Percent Distribution, of Fatal Occupational Injuries by Selected Characteristics, Michigan, 1997

Characteristic	Fatalities	
	Number	Percent
Total	174	100
Employee Status		
Wage and salary workers 1/	157	90
Self-employed 2/	17	10
Sex & Age		
Men	159	91
Women	15	9
Both sexes:		
Under 20 years	5	3
20 to 24 years	17	10
25 to 34 years	40	23
35 to 44 years	46	26
45 to 54 years	33	19
55 to 64 years	20	11
65 years and over	13	7
Race		
White	138	79
Black	15	9
Other	18	10
Hispanic origin		
Hispanic 3/	3	2

1/ May include volunteers and other workers receiving compensation

2/ Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships.

3/ Persons identified as Hispanic may be of any race.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies. Census of Fatal Occupational Injuries, 1997.

Table 3. Number and Percent Distribution of Fatal Occupational Injuries by Occupation, Michigan, 1997

1/ Occupation	Number	<u>Fatalities</u> Percent
Total	174	100
Managerial and professional specialty	29	17
Executive, administrative, and managerial	16	9
Managers and administrators. n.e.c.	7	4
Management related occupations	3	2
Professional specialty	13	7
Engineers, architects, and surveyors	4	2
Engineers	4	2
Writers, artists, entertainers and athletes	3	2
Technical sales, and administrative support	19	11
Technicians and related support occupations	6	3
Engineering and related technologists and technicians	4	2
Sales occupations	10	6
Supervisors and proprietors, sales occupations	6	3
Sales workers, retail and personal services	3	2
Cashiers	3	2
Administrative support occupations, including clerical	3	2
Service occupations	7	4
Protective service occupations	3	2
Police and detectives, including supervisors	3	2
Police and detectives, public service	3	2
Service occupations except protective and household	4	2
Farming, forestry and fishing	18	10
Farming operators and managers	7	4
Managers, farms, except horticulture	3	2
Other agricultural and related occupations	9	5
Farm occupations, except managerial	5	3
Farm workers	5	3
Related agricultural occupations	4	2
Groundskeepers and gardeners, except farm	4	2

**Table 3. Number and Percent Distribution of Fatal Occupational
Injuries by Occupation, Michigan, 1997
(continued)**

1/ Occupation	Number	<u>Fatalities</u> Percent
Precision production, craft & repair	42	24
Mechanics and repairers	11	6
Mechanics and repairers, except supervisors	11	6
Vehicle and mobile equipment, mechanics, repairers	7	4
Heavy equipment mechanics	3	2
Miscellaneous mechanics and repairers	4	2
Construction trades	25	14
Construction trades, except supervisors	25	14
Brickmasons, stonemasons, and apprentices	3	2
Carpenters and apprentices	8	5
Structural metal workers	3	2
Precision production occupations	6	3
Plant and system operators	3	2
Operators, fabricators, and laborers	59	34
Machine operators, assemblers, and inspectors	8	5
Machine operators, assorted materials	5	3
Transportation and material moving operations	25	14
Motor vehicle operators	20	11
Truck drivers	18	10
Material moving equipment operators	4	2
Handlers, equipment cleaners, helpers and laborers	26	15
Construction laborers	11	6
Freight, stock, and material handlers	4	2
Laborers except construction	8	5

1/ Based on the 1990 Occupational Classification System developed by the Bureau of the Census.

NOTE: Totals for major categories may include subcategories not shown separately.
Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal Agencies. Census of Fatal Occupational Injuries, 1997.

Table 4. Number and Percent Distribution of Fatal Occupational Injuries by Industry, Michigan, 1997

1/ Industry	<u>Fatalities</u>	
	Number	Percent
Total	174	100
Private Industry	166	95
Agriculture, forestry, and fishing	16	9
Agriculture production - crops	7	4
General farms, primary crop	6	3
Agricultural services	6	3
Construction	40	23
General building contractors	3	2
Residential building construction	3	2
Single-family housing construction	3	2
Heavy construction, except building	8	5
Heavy construction, except highway	6	3
Water, sewer, and utility lines	3	2
Special trades contractors	29	17
Masonry, stonework, tile setting and plastering	3	2
Carpentry and floor work	6	3
Carpentry work	6	3
Roofing, siding and sheet metal work	4	2
Miscellaneous special trade contractors	9	5
Structural steel erection	3	2
Excavation work	4	2
Manufacturing	35	20
Lumber and wood products	3	2
Logging	3	2
Stone, clay, glass and concrete products	4	2
Concrete, gypsum and plaster products	3	2
Primary metal industries	7	4
Blast furnace and basic steel products	4	2
Blast furnaces and steel mills	3	2

**Table 4. Number and Percent Distribution, of Fatal Occupational
Injuries by Industry, Michigan, 1997
(continued)**

1/ Industry	<u>Fatalities</u>	
	Number	Percent
Manufacturing (continued)		
Transportation equipment	8	5
Motor vehicles and equipment	8	5
Motor vehicles and car bodies	5	3
Motor vehicle parts and accessories	3	2
Transportation & public utilities	23	13
Trucking and warehousing	12	7
Trucking and courier service, except air	9	5
Local trucking, without storage	6	3
Transportation by air	3	2
Air transportation, scheduled	3	2
Electric, gas and sanitary services	4	2
Electric services	3	2
Wholesale trade	4	2
Wholesale trade - durable goods	3	2
Retail trade	18	10
Food stores	6	3
Grocery stores	5	3
Automotive dealers and service stations	5	3
Miscellaneous retail	3	2
Finance, Insurance and Real Estate	4	2
Depository institutions	3	2
Savings institutions	3	2

**Table 4. Number and Percent Distribution, of Fatal Occupational
Injuries by Industry, Michigan, 1997
(continued)**

1/ Industry	<u>Fatalities</u>	
	Number	Percent
Services	26	15
Business services	4	2
Automotive repair, services and parking	8	5
Automotive repair shops	4	2
Automotive services, except repair	3	2
Health services	3	2
Membership organizations	3	2
Religious organizations	3	2
Engineering and management services	3	2
Engineering and architectural services	3	2
Surveying services	3	2
2/		
Government	8	5

1/ Standard Industrial Classification Manual, 1987 Edition.

2/ Includes fatalities to workers employed by governmental organizations regardless of industry.

NOTE: Totals for major categories may include subcategories not shown separately.
Percentages may not add to totals due to rounding.

SOURCE: U. S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies.
Census of Fatal Occupational Injuries, 1997.

**Table 5. Number and Percent Distribution of Fatal Occupational Injuries
by Source of Injury, Michigan, 1997**

Source of Injury	Number	Percent
Chemicals and chemical products	4	2.3
Containers	3	1.7
Machinery	31	17.8
Agricultural and garden machinery	7	4.0
Construction, logging and mining machinery	9	5.2
Excavating machinery	6	3.4
Heating, cooling & cleaning machinery & appliances	2	1.1
Material handling machinery	10	5.7
Conveyors - powered	2	1.1
Cranes	7	4.0
Metal, woodworking, and special material machinery	1	0.6
Special process machinery	1	0.6
Parts and materials	11	6.3
Building materials - solid elements	3	1.7
Structural metal materials	1	0.6
Wood, lumber	1	0.6
Fasteners, connectors, ropes, ties	1	0.6
Machine tool and electric parts	3	1.7
Electric parts	3	1.7
Tars, sealants, caulking, insulating material	1	0.6
Vehicle and mobile equipment parts	3	1.7
Trailers	2	1.1
Persons, plants, animals and minerals	5	2.9
Nonmetallic minerals, except fuel	2	1.1
Dirt, earth	1	0.6
Sand, gravel	1	0.6
Plants, trees, vegetation not processed	3	1.7
Trees, logs	3	1.7
Structures and surfaces	25	14.4
Floors, walkways, ground surfaces	21	12.1
Floors	2	1.1
Ground	4	2.3
Parking lots	1	0.6
Other structural elements	3	1.7
Doors	1	0.6
Roof Trusses	1	0.6

**Table 5. Number and Percent Distribution of Fatal Occupational Injuries
by Source of Injury, Michigan, 1997
(continued)**

Source of Injury	Number	Percent
Tools, instruments and equipment	3	1.7
Vehicles	58	33.3
Air vehicle	12	6.9
Highway vehicle, motorized	36	20.7
Automobile	14	8.0
Truck	19	10.9
Van - passenger or light delivery	1	0.6
Plant and industrial powered vehicles, tractors	9	5.2
Forklift	4	2.3
Tractor	4	2.3
Rail vehicle	1	0.6
Other Sources	32	18.4
Ammunition	25	14.4
Bullets	25	14.4
Apparel and textiles	1	0.6
Atmospheric and environmental conditions	3	1.7
Fire, flame, smoke	3	1.7
Steam, vapors, liquids	3	1.7
Liquids	3	1.7
Unknown	2	1.1
Total	174	100.0

Note: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

Source: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies. Census of Fatal Occupational Injuries 1997.

Table 6
Number and Percent Distribution of Fatal Occupational Injuries
by Part of Body, Michigan, 1997

Part of Body	Number	Percent
Head	47	27.0
Cranial region, including skull	34	19.5
Brain	33	19.0
Multiple, cranial region locations	1	0.6
Neck, including throat	2	1.1
Neck, except internal location of diseases or disorders	2	1.1
Trunk	46	26.4
Chest, except internal location of diseases or disorders	7	4.0
Chest including ribs, internal organs	7	4.0
Abdomen	3	1.7
Multiple trunk locations	30	17.2
Lower extremities	2	1.1
Legs	2	1.1
Body Systems	19	10.9
Multiple Body Parts	58	33.3
TOTAL	174	100.0

Note: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

Source: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies. Census of Fatal Occupational Injuries 1997.

CHART 1
Fatal Occupational Injuries by Nature of Injury
Michigan, 1997

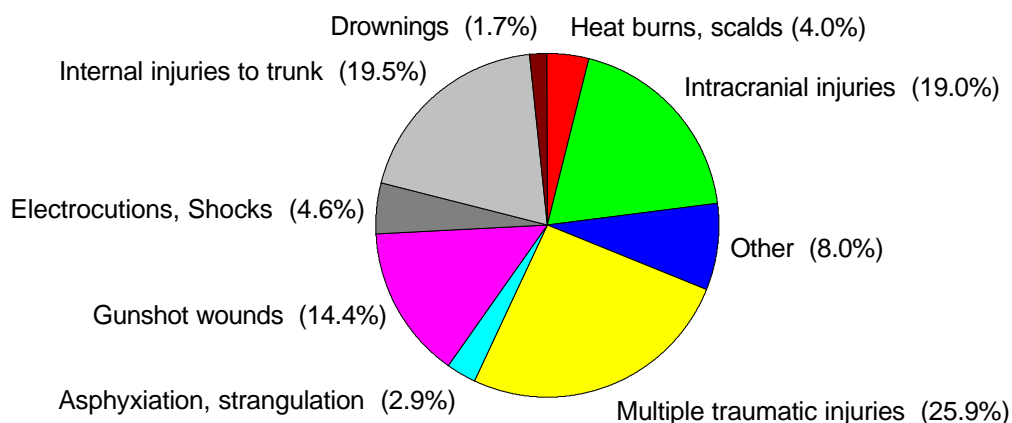
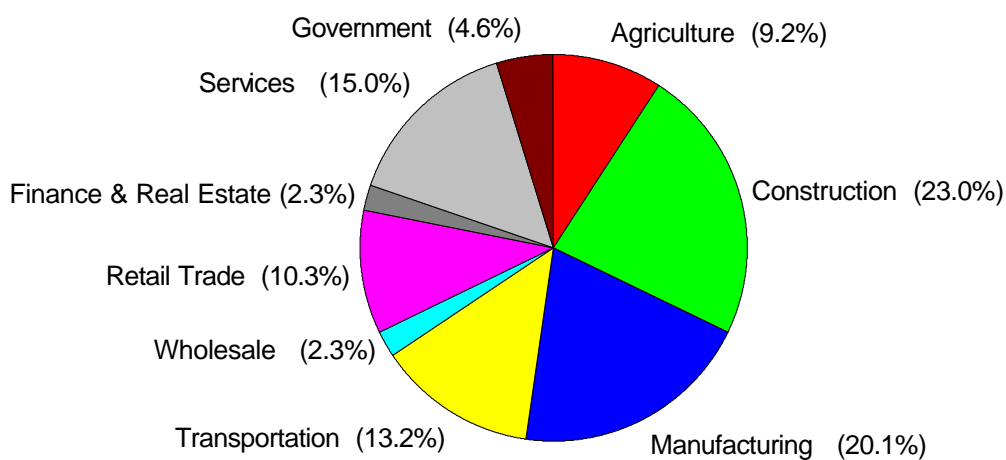


CHART 2
Fatal Occupational Injuries by Industry Division
Michigan, 1997



SOURCE: Bureau of Labor Statistics, in cooperation with State and Federal agencies. Census of Fatal Occupational Injuries, 1997.

TECHNICAL NOTES

Definitions

For a fatality to be considered within the scope of the program, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in legal work activity or present at the site of the incident as a requirement of his or her job. The criteria are generally broader than the criteria used by Federal and State agencies administering specific laws and regulations. (Fatalities that occur during a persons commute to and from work are excluded from the census counts)

Data presented in this release include deaths occurring in 1997 that resulted from traumatic occupational injuries. An injury is defined as an intentional or unintentional wound or damage to the body resulting from acute exposure to energy, such as heat or electricity or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Included are open wounds, intracranial and internal injuries, heatstroke, hypothermia, asphyxiation, acute poisonings resulting from a short-term exposure (limited to the worker's shift), suicides and homicides, and work injuries listed as underlying or contributory causes of death.

Information on work-related fatal illnesses are excluded from the BLS census and the attached tables because of the latency period of many occupational illnesses and the resulting difficulties associated with linking illnesses to work. Partial information on fatal occupational illnesses, compiled separately, will be made available to researchers upon written request.

Measurement Techniques and Limitations

Data for the Census of Fatal Occupational Injuries are compiled from various state and federal administrative sources--including death certificates, workers compensation reports and claims, reports to various regulatory agencies and medical examiner reports--as well as news reports. Multiple sources are used because studies have shown that no single source captures all job-related fatalities. Source documents are matched so that each fatality is counted only once. To ensure that a fatality occurred while the decedent was at work, information is verified from two or more independent source documents, or from a source document and a follow-up questionnaire. Approximately 30 data elements are collected, coded, and tabulated, including information about the worker, the fatal incident, and the machinery or equipment involved.

Federal/State Agency Coverage

The Census of Fatal Occupational Injuries includes data for all fatal work injuries, whether they are covered by the Michigan Occupational Safety and Health Administration (MIOSHA) or other federal or state agencies or are outside the scope of regulatory coverage. Thus, any comparison between the BLS census counts and those released by other agencies should take into account the different coverage and definitions being used.

Several Federal and State agencies have jurisdiction over workplace safety and health. The Occupational Safety and Health Administration (OSHA) and its affiliated agencies in States such as Michigan with OSHA approved safety programs cover the largest portion of America's workers. However, accidents occurring in several other industries, such as coal, metal and nonmetal mining and transportation on water, rails or in the air, are excluded from OSHA coverage because they are covered by other Federal agencies, such as the Mine Safety and Health Administration, the U.S. Coast Guard, the Federal Railroad Administration, and the Federal Aviation Administration. Fatalities occurring in industries regulated by Federal agencies are included in the count of fatal work injuries for Michigan in 1997.

Fatalities occurring among many other groups of workers are generally not covered by any Federal or State agencies. These groups include self-employed and unpaid family workers, which accounted for about 10 percent of the fatalities, and laborers on small farms.

Acknowledgments: We appreciate the effort of all agencies that submitted source documents used to achieve the objectives of this program. To collect and publish data on fatal work injuries that are timely, accurate, comprehensive, and useful for injury prevention.

Among these agencies are the Occupational Safety and Health Administration; National Institute for Occupational Safety and Health; the Center for Disease Control and Prevention; the Mine Safety and Health Administration; the Employment Standards Administration (Federal Employees' Compensation and Longshore and Harbor Workers' divisions); the National Transportation Safety Board; the Department of Energy; the National Association of Chiefs of Police; the Michigan vital statistics registrars, coroners, and medical examiners; the Michigan Bureau of Workers Disability Compensation; the Michigan Department of Community Health, State Registrar and Division of Health Statistics; the Michigan State Police Office of Highway and Safety Planning; and the state farm bureaus.

MIOSHA

Michigan Occupational Safety & Health Act